

CLAIMS

1. A strategy for suppressing or partially suppressing an endogenous gene and replacing the suppressed gene sequence with a nucleic acid sequence which differs from the endogenous gene and wherein the suppressing agent(s) comprises at least one suppressor from the group comprising antisense nucleic acid, peptide nucleic acids, DNA capable of forming triple helix or ribozymes targeted to the endogenous gene or gene transcripts and wherein the replacement nucleic acid sequence encodes at least part of a gene product and is not suppressed by suppression agent(s) or is suppressed less efficiently by suppression agent(s) and wherein the replacement nucleic acid sequence comprises amino acid codons which encode at least part of the gene product, and have modifications at wobble site(s) such that replacement nucleic acids still code for the wild type or equivalent amino acids.
2. A medicament comprising either one or both of a gene suppressing agent and a nucleic acid encoding at least part of a replacement gene product for use in a strategy as claimed in Claim 1.
3. A medicament comprising a nucleic acid sequence encoding at least part of a gene product wherein the sequence differs from the endogenous gene in wobble sites.
4. A strategy for suppressing or partially suppressing an endogenous gene and introducing a replacement gene said strategy comprising the steps of:

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- 1 a. providing suppression nucleic acids or other
2 suppression effector(s) able to recognise,
3 bind or cleave an endogenous gene, gene
4 transcript(s) or gene product to be
5 suppressed and
6 b. providing genomic DNA or cDNA (complete or
7 partial) encoding a replacement gene wherein
8 the suppression nucleic acids are unable to
9 recognise, bind or cleave or able to
10 recognise, bind or cleave less efficiently
11 equivalent regions in the genomic DNA or cDNA
12 to prevent suppression of the replacement
13 gene wherein the coding sequence of
14 replacement nucleic acids has been altered to
15 prevent or reduce efficiency of suppression
16 and wherein replacement nucleic acids have
17 modifications in one or more wobble sites
18 such that replacement nucleic acids still
19 code for the wild type or equivalent amino
20 acids.
21
22 5. The use of a strategy as claimed in any of the
23 preceding Claims in the preparation of a
24 medicament for the treatment of an autosomal
25 dominant disease caused by an endogenous target
26 gene wherein the disease is caused by different
27 mutations in the same gene in different patients.
28
29 6. The use of:
30 a. a vector or vectors containing suppression
31 effector(s), said suppression effector(s)
32 being able to recognise, bind or cleave
33 coding sequences of a target endogenous gene
34 and
35 b. vector(s) containing replacement nucleic
36 acids in the form of genomic DNA, cDNA or

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1 RNA, which contain altered wobble sites such
2 that replacement nucleic acids cannot be
3 recognised, bound or cleaved by suppressor(s)
4 or are recognised, bound or cleaved less
5 efficiently by suppressor(s) which are
6 targeted towards coding sequence of the
7 endogenous gene and which provide the wild
8 type gene product and wherein the difference
9 between said endogenous gene and the
10 replacement gene still enables the expression
11 of the replacement gene.

12
13 in the preparation of a medicament for the
14 treatment of an autosomal dominant disease caused
15 by the endogenous gene wherein the disease is
16 caused by different mutations in the same gene in
17 different patients.

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19 *Insert* 7. A use as claimed in Claims 5 or 6 wherein the
20 disease is a polygenic disorder.
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22 *A3* 8. A use as claimed in Claim 6 or 7 wherein
23 suppressor(s) or replacement gene(s) are
24 administered alone or in vector(s) chosen from DNA
25 plasmid vectors, RNA or DNA viral vectors.
26
27 9. A use as claimed in Claim 8 wherein the
28 suppressor(s) or replacement gene(s) are combined
29 with lipids, polymers or other derivatives.
30
31 ✓ 10. A kit for use in the treatment of an autosomal
32 dominant or polygenic disease caused by
33 mutation(s) in a target endogenous gene, the kit
34 comprising at least one suppression effector able
35 to recognise, bind or cleave coding sequence(s) of
36 the endogenous gene to be suppressed and at least

36

1 one replacement gene to replace the endogenous
2 gene having modifications to wobble sites such
3 that the replacement gene cannot be recognised,
4 bound or cleaved or can be recognised, bound or
5 cleaved less efficiently by suppressor(s) targeted
6 to coding sequence(s) of the endogenous gene, said
7 replacement nucleic acid sequence providing the
8 wild type gene product, and wherein the difference
9 between said wild type target gene and the
10 replacement gene still enables expression of the
11 replacement gene.

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13 11. A use as claimed as in Claims 1 to 10 wherein the
14 replacement gene is altered from the wild type
15 gene and provides a beneficial effect when
16 compared to the wild type gene.
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